

We claim:

1. A cannula assembly for the maintenance of an operative pneumoperitoneum in a patient comprising:
 - an elongated cannula having a proximal end and a distal end;
 - an air inflow inlet arranged in said cannula as a laparoscopic instrument is introduced through said cannula, between said instrument and an inner wall of said cannula.
2. The cannula assembly as recited in claim 1, including:
 - a valve securably arranged at said proximal end of said cannula to provide a tight seal and minimize the escape of gas introduced into the patient's pneumoperitoneum when an operative instrument is passed therethrough.
3. The cannula assembly as recited claim 1 wherein said valve comprises an inner portion of a proximal cap which is removably attachable to said proximal end of said cannula.

4. The cannula assembly as recited in claim 3, wherein said valve assembly has a compressible O-ring thereon to provide a further seal of said cap to said cannula.
5. The cannula assembly as recited in claim 2 wherein said valve has a plurality of fluid flow directing fins thereon to direct any backflow of gas to tighten the sealing effect of said valve.
6. The cannula assembly as recited in claim 2 wherein said valve has a distal underside with a pocket arrangement thereon to capture any backflowing gas and create a more efficient seal by said valve in said cannula.
7. The cannula assembly as recited in claim 2, wherein said operative instrument has at least one gaseous fluid discharge port arranged thereon to permit the introduction of distension gas through said instrument and into said patient.

8. The cannula assembly as recited in claim 7, wherein said gaseous port comprises a collar disposed about at least a peripheral portion of said instrument, said collar having at least one discharge jet thereon to provide pressurized gas from a controlled pressure source to said patient's abdomen.

9. A method of maintaining an operative pneumoperitoneum in a patient undergoing a surgical procedure comprising:

introducing a trocar through a portion of an abdominal wall of said patient;

introducing an operative surgical instrument through a lumen in said trocar; and

introducing a pressurized gas from a controlled pressure source into said patient through a passageway between said surgical instrument and a wall of said lumen in said trocar.

10. The method as recited in claim 9, including:

introducing said pressurized gas into said passageway between said surgical instrument and a wall of said lumen in said trocar via at least one port in said trocar.

11. The method as recited in claim 9, including:

introducing said pressurized gas into said passageway between said surgical instrument and a wall of said lumen in said trocar via at least one port in a wall portion of said surgical instrument.

12. The method as recited in claim 9, including:

introducing at least one cannula into an abdominal wall portion of said patient;

introducing at least one operative surgical instrument through said at least one cannula to permit simultaneous operative function with said trocar as said trocar is caused to introduce distension gas into said patient.

13. The method as recited in claim 12, including:

introducing a further cannula into said patient being operated upon; and

monitoring the pneumoperitoneum of said patient through said further cannula introduced into said patient.

14. The method as recited in claim 12, including;

arranging a removable valve onto said proximal end of said trocar.

15. A method of maintaining an operative pneumoperitoneum in a patient undergoing a surgical procedure comprising:

introducing a trocar through a portion of an abdominal wall of said patient;

introducing an operative surgical instrument through a lumen in said trocar;

introducing a pressurized gas from a controlled pressure source into said patient through an gas passageway between said surgical instrument and a wall of said lumen in said trocar;

introducing a cannula through said abdominal wall of said patient; and

connecting said trocar and said cannula in fluid communication with one another through a conduit arranged therebetween to provide controlled pressure within the abdomen of said patient.

16. The method as recited in claim 15, including:

arranging an air seal in said trocar at a location proximal to said gas passageway therein.

17. The method as recited in claim 15, wherein said trocar which introduces gas into said patient and said cannula are arranged in communication with one another to controllably balance said pressurized gas introduced into said patient.

18. The method as recited in claim 15, wherein said trocar has a plurality of medically operative instruments extending therethrough simultaneously.

19. The method as recited in claim 15, wherein said cannula has an open bore extending therethrough to permit operative instruments therethrough without a mechanical seal.